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Atty. Docket No.: 22085/2112

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Timperman
Serial No.: 10/784,393
Filed: February 23, 2004
Entitled: Apparatus and Method for On-Chip
Concentration Using a Microfluidic
Device with an Integrated
Ultrafiltration Membrane Structure

Examiner: Not Yet Assigned

Group Art Unit: 1744

Conf. No.: 8432

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8a

I hereby certify that this correspondence (and any paper or fee referred to as being enclosed) is being deposited with the United States Post Office as First Class Mail on the date indicated below in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Michael P. Doyle

Name of Person Mailing Paper

Signature of Person Mailing Paper

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL LETTER

Enclosed for filing in the above-identified patent application, please find the following documents:

1. Information Disclosure Statement;
2. Form PTO-1449 listing 42 references;
3. Copies of 32 Non-U.S. References; and
4. Return Post Card.

The Commissioner for Patents is hereby authorized to charge any fees to Deposit Account No. 16-0085, Reference 22085/2112. A duplicate of this transmittal letter is enclosed for this purpose.

Respectfully submitted,

Date: July 29, 2004

Name: Michael P. Doyle
Registration No.: 49,052
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Palmer & Dodge LLP
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Tel: 617-239-0100



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**Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

**INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §§ 1.56, 1.97 AND 1.98**

Dear Sir:

In accordance with the duty of disclosure under 37 CFR § 1.56, Applicant submits this Information Disclosure Statement pursuant to 37 CFR §§ 1.97 and 1.98 in the above-identified application for consideration by the Patent Office.

A listing of the cited documents, as well as, for the Examiner's convenience, copies of all foreign patent documents and non-patent literature are enclosed. This application was filed after June 30, 2003, and copies of U.S. patents and U.S. patent applications are not required and are not enclosed.

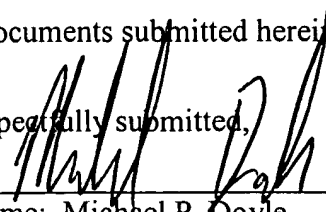
Pursuant to CFR § 1.97(b)(3), because this Statement is being submitted before the first Office Action on the merits, no fee is required.

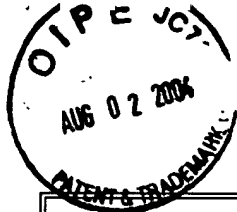
Applicant does not intend to represent that any of the documents submitted herein are material prior art to this invention or that the list represents an exhaustive search of documents related to this invention.

Applicant respectfully requests that the documents submitted herein be considered and made of record in this application.

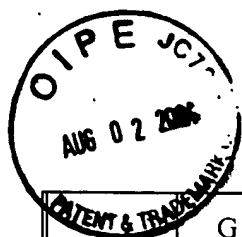
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USPTO Form 1449 U.S. Department of Commerce Patent and Trademark Office INFORMATION DISCLOSURE STATEMENT				Attorney Docket No. 22085/2112		Serial No. 10/784,393		
				Applicant(s): Timperman				
				Filing Date: February 23, 2004		Group: 1744		
U.S. PATENT DOCUMENTS								
Examiner Initial		Patent No.	Date	Name	Class	Subclass	Filing Date (if appropriate)	
		5,240,577	August 31, 1993	Jorgenson et al.	204	180.1	June 1, 1992	
		5,599,432	February 4, 1997	Manz et al.	204	451	November 8, 1994	
		5,942,093	August 24, 1999	Rakestraw et al.	204	450	June 18, 1997	
		6,008,893	December 28, 1999	Roos et al.	356	246	March 22, 1999	
		6,136,212	October 24, 2000	Mastrangelo et al.	216	49	August 6, 1997	
		6,171,067	January 9, 2001	Parce	417	48	October 20, 1999	
		6,267,926	July 31, 2001	Reed et al.	422	48	October 8, 1998	
		6,271,021	August 7, 2001	Burns et al.	435	287.2	March 18, 1999	
		6,274,089	August 14, 2001	Chow et al.	422	101	June 8, 1998	
		6,428,666	August 6, 2002	Singh et al.	204	450	February 22, 1999	
FOREIGN PATENT DOCUMENTS								
Examiner Initial		Document No.	Publication Date	Country	Class	Subclass	Translation	
							YES	NO
OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)								
	A	Chen et al., <u>A Planar Electroosmotic Micropump</u> , 2002, Journal of Microelectromechanical Systems, Vol. 11, No. 6, 672-683						
	B	Chien et al., <u>Electroosmotic Pumping in Microchips with Nonhomogeneous Distribution of Electrolytes</u> , 2002, Electrophoresis, Vol. 23, 1862-1869.						
	C	Culbertson, et al., <u>Electroosmotically Induced Hydraulic Pumping on Microchips: Differential Ion Transport</u> , 2000, Anal. Chem., Vol. 72, 2285-2291						
	D	Figeys et al., <u>Optimization of Solid Phase Microextraction-Capillary Zone Electrophoresis-Mass Spectrometry for High Sensitivity Protein Identification</u> , 1998, Electrophoresis, Vol. 19, 2338-2347						
	E	Figeys et al., <u>Proteomics on a Chip: Promising Developments</u> , Electrophoresis, 2001, Vol. 22, pages 208-216						
	F	Gao et al., <u>Integrated Microfluidic System Enabling Protein Digestion, Peptide Separation, and Protein Identification</u> , 2001, Anal. Chem., Vol. 73, 2648-2655						



G	Harrison et al., <u>Capillary Electrophoresis and Sample Injection Systems Integrated on a Planar Glass Chip</u> , 1992, Anal. Chem., Vol. 64, 1926-1932
H	Jacobson et al., <u>Effects of Injection Schemes and Column Geometry on the Performance of Microchip Electrophoresis Devices</u> , 1994, Anal. Chem., Vol. 66, 1107-1113
I	Khandurina et al., <u>Microfabricated Porous Membrane Structure for Sample Concentration and Electrophoretic Analysis</u> , 1999, Anal. Chem., Vol. 71, 1815-1819
J	Li et al., <u>Integrated System for High-Throughput Protein Identification Using a Microfabricated Device Coupled to Capillary Electrophoresis/Nanoelectrospray Mass Spectrometry</u> , 2001, Eur. J. Mass. Spec., Vol. 7, 143-155
K	Li et al., <u>Integration of Microfabricated Devices to Capillary Electrophoresis-Electrospray Mass Spectrometry Using a Low Dead Volume Connection: Application to Rapid Analyses of Proteolytic Digests</u> , 1999, Anal. Chem. Vol. 71, 3036-3045
L	Licklider et al., <u>Characterization of Reaction Dynamics in a Trypsin-Modified Capillary Microreactor</u> , 1998, Anal.Chem., Vol. 70, 1902-1908
M	Licklider et al., <u>On-Line Microreactors/Capillary Electrophoresis/Mass Spectrometry for the Analysis of Proteins and Peptides</u> , 1995, Anal.Chem., Vol. 67, 4170-4177
N	Link et al., <u>Direct Analysis of Protein Complexes Using Mass Spectrometry</u> , 1999, Nature Biotechnology, Vol. 17, 676-682
O	Liu et al., <u>On-Line Dual Microdialysis with ESI-MS for Direct Analysis of Complex Biological Samples and Microorganism Lysates</u> , 1998, Anal. Chem., Vol. 70, 1797-1801
P	Liu et al., <u>Optimization of High-Speed DNA Sequencing on Microfabricated Capillary Electrophoresis Channels</u> , 1999, Anal. Chem., Vol. 71, 566-573
Q	Liu et al., <u>Two-Dimensional Separations: Capillary Electrophoresis Coupled to Channel Gel Electrophoresis</u> , 1996, Anal. Chem., Vol. 68, 3928-3933
R	McKnight et al., <u>Electroosmotically Induced Hydraulic Pumping with Integrated Electrodes on Microfluidic Devices</u> , 2001, Anal. Chem., Vol. 73, 4045-4049.
S	Morf et al., <u>Partial Electroosmotic Pumping in Complex Capillary Systems Part 1: Principles and General Theoretical Approach</u> , 2001, Elsevier Science B.V., Vol. 72, 266-272
T	Oleschuk et al., <u>Trapping of Bead-Based Reagents within Microfluidic Systems: On-Chip Solid-Phase Extraction and Electrochromatography</u> , 2000, Anal. Chem., Vol. 72, 585-590
U	Opiteck et al., <u>Comprehensive Two-Dimensional High-Performance Liquid Chromatography for the Isolation of Overexpressed Proteins and Proteome Mapping</u> , 1998, Analytical Biochemistry, Vol. 258, 349-361
V	Opiteck et al., <u>Two-Dimensional Microcolumn HPLC Coupled to a Single-Quadrupole Mass Spectrometer for the Elucidation of Sequence Tags and Peptide Mapping</u> , 1998, Journal of Microcolumn Separations, Vol. 10, 365-375
W	Simpson et al., <u>High-Throughput Genetic Analysis using Microfabricated 96-Sample Capillary Array Electrophoresis Microplates</u> , 1998, Proc. Natl. Acad. Sci. USA, Vol. 95, 2256-2261



X	Timperman et al., <u>Peptide Electroextraction for Direct Coupling of In-Gel Digests with Capillary LC-MS/MS for Protein Identification and Sequencing</u> , 2000, Anal. Chem., Vol. 72, 4115-4121
Y	Timperman et al., <u>Wavelength-Resolved Fluorescence Detection in Capillary Electrophoresis</u> , 1995, Anal.Chem., Vol. 67, 139-144
Z	Vissers et al., <u>Two-Dimensional Capillary Liquid Chromatography Based on Microfractionation</u> , 1999, Journal of Microcolumn Separations, Vol. 11, No. 4, 277-286
AA	Wall et al., <u>Isoelectric Focusing Nonporous RP HPLC: A Two-Dimensional Liquid-Phase Separation Method for Mapping of Cellular Proteins with Identification Using MALDI-TOF Mass Spectrometry</u> , 2000, Anal. Chem., Vol. 72, 1099-1111
BB	Wang et al., <u>Integration of Immobilized Trypsin Bead Beds for Protein Digestion within a Microfluidic Chip Incorporating Capillary Electrophoresis Separations and an Electrospray Mass Spectrometry Interface</u> , Rapid Communications in Mass Spectrometry, 2000, Vol. 14, pages 1377-1383
CC	Xiang et al., <u>An Integrated Microfabricated Device for Dual Microdialysis and On-Line ESI-Ion Trap Mass Spectrometry for Analysis of Complex Biological Samples</u> , 1999, Anal. Chem., Vol. 71, 1485-1490
DD	Xu et al., <u>A Microfabricated Dialysis Device for Sample Cleanup in Electrospray Ionization Mass Spectrometry</u> , 1998, Anal. Chem., Vol. 70, 3553-3556
EE	Yang et al., <u>Characterization of Microdialysis Acidification for Capillary Isoelectric Focusing-Microelectrospray Ionization Mass Spectrometry</u> , 1998, Anal. Chem., Vol. 70, 4945-4950
FF	Zhang et al., <u>De Novo Peptide Sequencing by Two-Dimensional Fragment Correlation Mass Spectrometry</u> , 2000, Anal. Chem., Vol. 72, 2337-2350.

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

**Copies of references not provided at the time of this submission.